

TITLE: METHODS OF COLLECTION OF SMOKE FOR ANALYTICAL PURPOSES

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ABSTRACT: Cigarette smoke aerosol is a lightly charged, highly concentrated matrix of submicron particles contained in a gas with each particle being a multicompositional collection of compounds arising from distillation, pyrolysis, and combustion of tobacco. Methods used to generate and trap the smoke aerosol exert profound effects on the composition of the condensate. Standardization of smoking parameters has minimized the variability resulting from artificial smoking; however, the traps used to collect cigarette smoke remain as a major contributor to non-reproducibility. Numerous traps, including the Cambridge pad, electrostatic precipitator, jet impactor, cold traps, solid adsorbents, and solvent traps have been used to collect mainstream smoke. Artifact formation is a major drawback associated with many of the trapping procedures. Sidestream smoke analysis is a two-stage process that includes collection and trapping. Many collection chambers have been designed for this purpose, but for the most part, the same traps used for mainstream smoke are employed for the trapping of sidestream smoke. Most sidestream collection systems are designed for single cigarette analyses. It has been suggested that pyrolysis techniques can be used to generate condensates which are equivalent to material collected from smoking. All available information suggests that this is not true. Pyrolysis techniques are useful in the analysis of tobacco, but they do not adequately simulate smoking.

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